

## Science of Synthesis as a Teaching Resource: Useful Links

Science of Synthesis (SOS) is your online tool for comprehensive and quality organic synthesis reviews for the most reliable chemical transformations available. It is the only resource available containing methods with full-text reviews by experts, experimental procedures and accurate and detailed reaction schemes. For more information about Science of Synthesis [click here](#).

sos.thieme.com

In addition to its application as a tool to aid synthetic chemistry research, we would like to highlight how the authored content of Science of Synthesis can also be useful in an educational context. We have collected together some direct links to Science of Synthesis chapters that are useful as a resource for the preparation and teaching of advanced organic chemistry courses. The articles by expert chemists on particular topics (e.g., types of transformation, named reactions) can be used as a reference resource when preparing course material. They also serve as an excellent starting point for students for further reading around a topic. Furthermore, Science of Synthesis is a useful resource to students who are assigned coursework such as compiling a literature review on an area of synthetic organic chemistry, or when writing an introduction to a thesis.

- The chapters denoted with a \* are those which the editorial office feel might be particularly useful from a teaching perspective. This generally means that there is a broad coverage of the topic in question, and this is often supplemented in the discussion text with significant details of aspects such as mechanisms, selectivity, scope/limitations, practical examples, etc.
- A significant advantage of Science of Synthesis is the ability to put a particular method in context with related methods/approaches to the one being viewed. Clicking on the “**Explore Contents**” tab at any time will show the location of the article you are reading in the unique organized hierarchy of Science of Synthesis, and this can help students put a particular process in context. e.g., Which metals other than manganese (Jacobsen epoxidation) have been used to catalyze alkene epoxidations.
- The content serves as a quick and easy resource for both tutors and students to organize and access the key original articles from the literature on a particular topic. The reference list at the bottom of each section of content links directly through to the original literature.
- We are often complimented on the clarity of the schemes and figures in Science of Synthesis; although there is currently no tool for downloading these, if you would like to be supplied with the original drawings for any particular chapter to aid with the preparation of course materials, then please just get in touch with the editorial office ([SOS\\_techsupport@thieme.com](mailto:SOS_techsupport@thieme.com)).
- Note that it is possible to download and save entire chapters by clicking on the “Download PDF” icon found at the top right of any content page.

You can also save/print the “page” currently being viewed using the neighboring printer icon.



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**A**

[Alder-ene reactions](#) (1)\*  
[Alder-ene reactions](#) (2)\*  
[aldol addition](#)\*  
[aldol condensation](#)\*  
[Appel reaction \(alkyl bromides\)](#)  
[Appel reaction \(alkyl chlorides\)](#)  
[Arbuzov reaction](#)  
[Arndt–Eistert reaction](#)\*  
[aza-Cope Mannich rearrangement](#)  
[aza-Henry reaction](#) (1)  
[aza-Henry reaction](#) (2)  
[aza-Morita–Baylis–Hillman reaction](#) (1)\*  
[aza-Morita–Baylis–Hillman reaction](#) (2)\*  
[aza-oxa-Cope rearrangement](#)  
[azide–alkyne Huisgen cycloaddition](#)  
[aziridination of alkenes](#) (1)\*  
[aziridination of alkenes](#) (2)\*

**B**

[Baeyer–Villiger oxidation](#) (general)\*  
[Baeyer–Villiger oxidation](#) (stereoselective)\*  
[Balz–Schiemann reaction](#)  
[Bamford–Stevens reaction](#)\*  
[Barton decarboxylation](#)  
[Barton–McCombie reaction](#)\*  
[Baylis–Hillman reaction](#) (1)\*  
[Baylis–Hillman reaction](#) (2)\*  
[Beckmann rearrangement](#) (1)\*  
[Beckmann rearrangement](#) (2)\*  
[benzoin condensation](#) (asymmetric)\*  
[benzoin condensation](#) (using NHCs)  
[Bergman cyclization](#)  
[Bestmann–Ohira reagent](#)  
[Betti reaction](#)  
[Biginelli reaction](#)\*  
[Birch reduction](#) (of arenes)\*  
[Birch reduction](#) (of hetarenes)

[Bischler–Napieralski reaction](#)  
[Blaise reaction](#)  
[Blanc reaction](#)  
[Bohlmann–Rahtz pyridine synthesis](#)  
[boronic acid Mannich reaction](#)  
[Brook rearrangement](#)  
[Brook rearrangement](#) (applied in domino reactions)  
[Brown hydroboration](#)\*  
[Bucherer–Bergs hydantoin synthesis](#) (1)  
[Bucherer–Bergs hydantoin synthesis](#) (2)  
[Buchwald–Hartwig cross-coupling reaction](#) (1)\*  
[Buchwald–Hartwig cross-coupling reaction](#) (2)\*  
[Buchwald–Hartwig cross-coupling reaction](#) (3)\*

**C**

[Cadiot–Chodkiewicz coupling](#)  
[Cannizzaro reaction](#)  
[Chan–Lam–Evans coupling](#) (of alkylamines)  
[Chan–Lam–Evans coupling](#) (of arylamines)  
[Chugaev reaction](#)\*  
[Claisen condensation](#)  
[Claisen rearrangement](#) (1)\*  
[Claisen rearrangement](#) (2)\*  
[Clemmensen reduction](#)\*  
[Collins reagent](#)  
[Conia-ene reaction](#)  
[Cope elimination](#)  
[Cope rearrangement](#) (1)\*  
[Cope rearrangement](#) (2)\*  
[Corey–Bakshi–Shibata reduction](#)\*  
[Corey–Chaykovsky aziridination](#)\*  
[Corey–Chaykovsky cyclopropanation](#)  
[Corey–Chaykovsky epoxidation](#)\*  
[Corey–Fuchs reaction](#)  
[Corey–Kim oxidation](#)  
[Corey–Winter alkene synthesis](#)  
[cross metathesis](#)  
[cross-coupling reactions](#)

[cross-enyne metathesis](#)

[CuAAC click reactions](#)\*

[Curtius rearrangement](#)† (1)\*

[Curtius rearrangement](#) (2)\*

[cyclopropanations](#)

## D

[Dakin oxidation](#)

[Darzens reaction](#) (1)

[Darzens reaction](#) (2)

[Dess–Martin oxidation](#) (aldehydes)

[Dess–Martin oxidation](#) (ketones)

[Dieckmann condensation](#)

[Diels–Alder reaction](#)\*

[Diels–Alder reaction](#)\*

[dihydroxylation of alkenes](#)

[domino reactions](#) (table of contents)

[domino reactions](#)\*

## E

[Eglinton reaction](#)

[ene reactions](#) (1)\*

[ene reactions](#) (2)\*

[enyne metathesis](#)\*

[Eschenmoser–Tanabe fragmentation](#) (1)

[Eschenmoser–Tanabe fragmentation](#) (2)

[Evans–Tishchenko reaction](#)

## F

[Favorskii rearrangement](#)

[Ferrier/Petasis rearrangements](#)

[Fischer indole synthesis](#)\*

[Fischer–Speier esterification](#)

[Fleming–Tamao Oxidation](#)

[Friedel–Crafts acylation](#)\*

[Friedel–Crafts alkylation](#)

[Friedlaender quinoline synthesis](#)

[Fries rearrangement](#)

[Fukuyama coupling](#)

## G

[Gabriel synthesis](#)\*

[Gattermann reaction](#)

[Gattermann–Koch reaction](#)

[Gewald reaction](#)\*

[Gilman reagents](#)

[Glaser coupling](#)\*

[glycosylation](#)

[Grignard reagents](#)

## H

[haloform reaction](#)\*

[Hantsch pyridine synthesis](#)\*

[Hay coupling](#)\*

[Heck reactions](#) (table of contents)

[Heck reactions](#)\*

[Henry reaction](#) (zinc catalyzed)

[Henry reaction](#)\*

[Hiyama coupling](#)

[Hiyama–Denmark coupling](#)

[Hofmann elimination](#) (1)\*

[Hofmann elimination](#) (2)

[Hofmann rearrangement](#)\*

[Hofmann–Löffler–Freytag rearrangement](#)

[Horner–Emmons reaction](#)

[Horner–Wadsworth–Emmons reaction](#)

[Hunsdiecker reaction](#)

[hydroformylation of alkenes](#) (1)\*

[hydroformylation of alkenes](#) (2)\*

[hydrogenation of alkenes](#) (asymmetric)

## I

[Ireland–Claisen rearrangement](#)\*

[Itsuno–Corey reduction](#)

## J

[Jacobsen–Katsuki epoxidation](#)\*

[Jones oxidation](#) (to give carboxylic acids)\*

[Jones oxidation](#) (to give ketones)\*

[Julia alkenation](#)\*

[Julia–Kocienski alkenation](#)

## K

[Kabachnik–Fields reaction](#)\*

[Knoevenagel–Doebner condensation](#)

[Koenigs–Knorr synthesis](#)

[Kolbe electrolysis](#)

[Kolbe–Schmitt reaction](#)

[Kulinkovich cyclopropanation](#)\*

[Kumada coupling](#)

## M

[Mannich reaction](#) (1)\*

[Mannich reaction](#) (2)\*

[Mannich reaction](#) (enamine catalyzed)\*

[Mannich reaction](#) (stereoselective)\*

[McMurry coupling](#)

[Meerwein arylation](#)

[Meerwein–Ponndorf–Verley reduction](#) (aldehyde reduction)\*

[Meerwein–Ponndorf–Verley reduction](#) (ketone reductions)

[Meyer–Shuster rearrangement](#)

[Michaelis–Arbuzov reaction](#)

[Mislow–Evans rearrangement](#)

[Miyaura borylation reaction](#)\*

[Mizoroki–Heck reaction](#)\*

[Morita–Baylis–Hillman reaction](#) (1)\*

[Morita–Baylis–Hillman reaction](#) (2)\*

[Mukaiyama aldol reaction](#)

[multicomponent reactions](#)

## N

[Nazarov cyclization](#)\*

[Nef reaction](#) (to give ketones)

[Negishi coupling](#) (table of contents)\*

[Negishi coupling](#) (alkenylzinc compounds)

[Negishi coupling](#) (arylzinc compounds)

[N-heterocyclic carbenes \(in catalysis\)](#)\*

[Nicholas reaction](#)

[nitro aldol reaction](#) (general)\*

[nitro aldol reaction](#) (stereoselective)

[Nozaki–Hiyama–Kishi coupling](#)\*

[Nozaki–Hiyama–Kishi coupling](#) (stereoselective)\*

[Nozaki–Hiyama–Kishi coupling](#) (intramolecular)\*

## O

[Ohia–Bestmann reagent](#)

[Overman rearrangement](#)\*

[oxy-Cope rearrangement](#)

[ozonolysis](#) (to give alcohols)

[ozonolysis](#) (to give aldehydes)\*

[ozonolysis](#) (to give ketones)

## P

[Paal–Knorr furan synthesis](#)

[Paal–Knorr pyrrole synthesis](#)

[Passerini reaction](#)\*

[Paternò–Büchi photocycloaddition](#)

[Pauson–Khand reaction](#) (1)\*

[Pauson–Khand reaction](#) (2)

[Pauson–Khand reaction](#) (3)

[Pechmann condensation](#)

[peptide coupling](#)\*

[Petasis reaction](#)\*

[Peterson alkenation](#)\*

[photocatalysis](#)\*

[photocatalysis: basic principles](#)\*

[Pictet–Spengler reaction](#)\*

[pinacol coupling](#)

[pinacol rearrangement](#) (to give aldehydes)

[pinacol rearrangement](#) (to give ketones)\*

[Pinner reaction](#)

[Polonovski reaction](#)

[Prévost–Woodward dihydroxylation](#)

[Prins reaction](#)

[Prins–pinacol rearrangement](#)

## R

[Ramberg–Bäcklund rearrangement](#)\*

[reductive amination](#) (general)\*

[reductive amination](#) (stereoselective)  
[Reformatsky reaction](#)  
[Reimer–Tiemann reaction](#)  
[ring-closing enyne metathesis \(RCEYM\)](#)  
[ring-closing metathesis \(RCM\)\\*](#)  
[ring-opening metathesis polymerization \(ROMP\)\\*](#)  
[Ritter reaction](#)  
[Robinson annulation](#)  
[Rosenmund reduction](#)  
[Rosenmund–von Braun reaction](#)  
[Rubottom oxidation](#)  
[Rupe rearrangement](#)

**S**

[Schiemann reaction](#)  
[Schlosser modification](#)  
[Schmidt reaction](#) (to give amines)  
[Schmidt reaction](#) (to give amides)  
[Seyferth–Gilbert homologation](#)  
[Shapiro reaction](#)  
[Sharpless aminohydroxylation\\*](#)  
[Sharpless dihydroxylation\\*](#)  
[Sharpless epoxidation\\*](#)  
[Shi epoxidation\\*](#)  
[sigmatropic rearrangements](#)  
[Simmons–Smith cyclopropanation](#) (1)\*  
[Simmons–Smith cyclopropanation](#) (2)\*  
[Sommelet–Hauser rearrangement](#)  
[SOMO catalysis\\*](#)  
[Sonogashira coupling\\*](#)  
[Staudinger cycloaddition](#)  
[Staudinger reduction](#)  
[Steglich esterification](#)  
[Stetter reaction\\*](#)  
[Stevens rearrangement](#)  
[Strecker reaction](#)  
[Stille coupling](#) (table of contents)\*  
[Stille coupling\\*](#)

[Strecker reaction\\*](#)  
[Suzuki coupling](#) (table of contents)\*  
[Suzuki coupling\\*](#)  
[Swern oxidation](#) (to give aldehydes)\*  
[Swern oxidation](#) (to give ketones)

**T**

[Tamao–Fleming Oxidation](#)  
[Tamao–Kumada Oxidation](#)  
[Tebbe olefination](#)  
[Thorpe–Ziegler reaction](#)  
[Tishchenko reaction](#)  
[transfer hydrogenation of carbonyls\\*](#)  
[trifluoromethylation reactions](#)

**U**

[Ugi reaction\\*](#)  
[Ullmann reaction\\*](#)  
[Upjohn dihydroxylation](#)

**V**

[Vilsmeier–Haack reaction\\*](#)

**W**

[Wacker process](#)  
[Wacker–Tsuji oxidation\\*](#)  
[Wagner–Meerwein rearrangement](#)  
[Wenker synthesis](#)  
[Willgerodt reaction\\*](#)  
[Willgerodt–Kindler reaction](#)  
[Williamson ether synthesis](#)  
[Wittig reaction](#) (table of contents)\*  
[Wittig reaction\\*](#)  
[Wittig–Horner reaction](#)  
[Wittig–Horner reaction](#) (*E*-selective)  
[Wittig–Horner reaction](#) (*Z*-selective)  
[\[1.2\]-Wittig rearrangement](#)  
[\[2.3\]-Wittig rearrangement](#) (1)  
[\[2.3\]-Wittig rearrangement](#) (2)  
[Wolff rearrangement\\*](#)  
[Wolff–Kishner reduction\\*](#)